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PHYSICS

Auroras Photographed At One Frame a Second

➤ A FAST CAMERA that photographs auroras over most of the sky at a speed of one frame each second has been developed in Ottawa, Canada.

This is about 30 times faster than was possible with previously available equipment. Series of photographs taken in rapid succession and covering as large a part of the sky as possible are useful for studying the rapid development and fading of auroral displays. They can also be used for relating the position, intensity and movement of auroras with radar echoes.

The camera combines a spheroidal mirror and a 16 mm movie camera especially designed for the job. It can be operated either by hand or automatically. The instrument was developed by R. Montalbetti of the Defence Research Board's Radio Physics Laboratory in Ottawa.

Overdeveloping fast film will step up the camera's rate to about five frames a second, he reports in the *Canadian Journal of Physics* (March).

Science News Letter, April 6, 1957

Do You Know?

Largest single item in the U. S. program for the International Geophysical Year is the *satellite*, which will cost \$20,000,000 or more.

Cimarron, said to be the world's largest living steer, is actually a cross between a Brahman cow and a buffalo (bison) bull and is the only one of its kind to reach maturity.

Main *coconut products* in international trade are copra and coconut oil, important in margarine and soap manufacture.

Scientists have developed a method to convert bark into an inexpensive and unusually effective *soil builder*.

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Questions

AERONAUTICS—Who will control the air-space above 24,000 feet soon? p. 213.

INVENTION—Who invented the mine detector? p. 218.

MEDICINE—What is necessary for the effectiveness of diabetic pills developed to replace insulin shots? p. 211.

PSYCHOLOGY—What do the Egyptians listen to rather than the content of conversation? p. 215.

Photographs: Cover, Dr. Erwin W. Muller, pp. 211 and 218, U. S. Army; p. 213, Sylvania Electric Products Inc.; p. 214, Union Carbide and Carbon Corporation; p. 215, Fremont Davis; p. 224, Eastman Chemical Products.

PHYSICS

Field Ion Microscope Shows Atomic Structure

See Front Cover

➤ THE ATOMIC STRUCTURE of a rhenium crystal as revealed by the field ion microscope, magnification of about 2,000,000, is shown on the cover of this week's SCIENCE NEWS LETTER.

A resolution of better than three Angstroms, which is necessary to resolve the atomic lattice of the surface, can now be obtained by operating the field emission microscope at a low tip temperature and with helium ions, Dr. Erwin W. Muller of Pennsylvania State University reports. Operation of the field emission microscope with ions rather than electrons, which was developed about five years ago, resulted in an improvement in resolution by a factor of about four down to perhaps five Angstroms.

A color printing technique, which permits finding quickly a few displaced atoms among the many thousands that are visible, has also been developed.

Pictures taken with the field ion microscope allow scientists actually to observe atomic structure as it is.

Science News Letter, April 6, 1957

Contract Bridge

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